22404
S/035/61/000/005/041/042
A001/A101

3.1800

AUTHORS: Ostrovskiy, A.Ye., Bakhrushin, A.B., Mironova, L.I.

TITLE: Earth's tidal inclines according to observations at Kondara in 1958

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 5, 1961, 33, abstract 50217 (V sb. "Gravimetr. issledovaniya", no. 1, Moscow, AN SSSR, 1960, 41 - 44, Engl. summary)

TEXT: Observations of tidal variations of inclines were conducted in a 100-m adit in 30 km from Stalinabad by means of inclinometers with photoelectric recording. The incline measurements were carried out in two azimuths: North-South and East-West. The results of harmonic analysis of three monthly observational series are presented for each component. The most reliable results were obtained for the M_2 wave:

in the North-South component $\gamma = 0.888 \pm 0.014$
in the East-West component $\gamma = 0.609 \pm 0.031$

The high values of $\gamma = 1 + k - h$ obtained from diurnal waves are caused, probably, by a temperature wave of a like frequency.

B. Pertsev

[Abstracter's note: Complete translation]

Card 1/1

BAKHRUSHIN, A.B.; ARTAMASOVA, G.P.

Diurnal variation of the coefficients γ and χ. Dokl. AN Tadzh. SSR 6 no.5:20-23 '63. (MIRA 17:4)

1. Institut seysmostoykogo stroitel'stva i seysmologii AN Tadzhikskoy SSR. Predstavleno chlenom-korrespondentom AN UkrSSR Z.N.Aksent'yevoy.

ACCESSION NR: AR4033695 S/0169/64/000/002/0027/0028

SOURCE: Ref. zh. Geofiz., Abs. 20193

AUTHOR: Bakhrushin, A. B.

TITLE: Results of observations of tidal tilts at Kondara station

CITED SOURCE: Sb. Izuch. semn. prilivov. No. 3. M., AN SSSR, 1963, 70-82

TOPIC TAGS: gravity field, earth tide, tiltmeter, photoelectric tiltmeter

TRANSLATION: Observations of tidal variations of tilts were made at Kondara (28 km to the north of Dushanbe) from September 1958 through January 1960. Three sets of photoelectric tiltmeters of the A. Ye. Ostrovskiy system were used. The instruments were set up in a drift at various distances from the adit. Recording was in a separate chamber near the adit of the drift. The diurnal variations of temperature within the drift were ~0.01°C. Relative humidity was 100%. The drift penetrated into granites in a zone of a major fracture. Tilts were recorded in directions close to the meridian and prime vertical. The accuracy of azimuthal setting of the instruments was ~±3'. Sixty independent monthly series of observations were subjected to harmonic analysis. The analysis revealed: 1) observations made

Card 1/2

ACCESSION NR: AR4033595

using the instruments set up in different places in the drift and having close azimuths give values $\gamma = 1 / k - h$ differing from one another by 20-30%; 2) in observations made with a single instrument the scattering in γ attains 20%. The scattering in the phase shifts attains still greater values. The reasons for such a large scattering in the results for the time being is unclear. The analysis also indicates that for any set of instruments the numbers γ computed on the basis of the M_2 wave conform to the inequality γ N-S > γ E-W. The mean value γ obtained from the records of all instruments is 0.709 ± 0.058. B. Pertsev

DATE ACQ: 31Mar64 SUB CODE: AS ENCL: 00

Card 2/2

BAKHRUSHIN, SERGEY VLADIMIROVICH

N/5
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Nauchnyye trudy (Scientific works) Moskva, Izd-vo AkademII Nauk SSSR, 1952 V. Port
At head of title: Akademiya Nauk SSSR. Institut IstorII.
Lib. Has: v.1

Deceased —

BAKHRUSHIN, V.A.; BONDAREV, A.Ye.; PRIKHOZHAN, A.Ye.; YAKIMOV, P.I.

Overall mechanization of the assembling of structural elements. Prom. stroi. 41 no.2:17-20 F '64. (MIRA 17:3)

1. Trest Volgogradorgstroy (for Bakhrushin, Prikhozhan). 2. Upravleniye Yuzhstal'konstuktsiya (for Bondarev). 3. Gosudarstvennyy institut po proyektirovaniyu, issledovaniyu i ispytaniyu stal'nykh konstruktsiy i mostov (for Yakimov).

S/117/61/000/004/001/007
A004/A101

AUTHOR: Bakhrushin, V. M.

TITLE: Pulsating conveyor for the trimming and cleaning of large-size castings

PERIODICAL: Mashinostroitel', no. 4, 1961, 12 - 13

TEXT: The new pulsating conveyer was put into service at the Khar'kovskiy traktornyy zavod (Khar'kov Tractor Plant). On the suggestion of the author and the head of the cleaning shop, Isichko, the conveyer was built without interrupting the production. The new conveyer is assembled from two individual conveyers connected by a tilting device and two roll trains. Cylinder blocks of the СМД (SMD) and ДТ-54 (DT-54) engines having undergone cleaning on suspension emery wheels are put on the conveyer by a half-ton crane while the driving mechanism conveying the castings is switched on either by hand or automatically. Simultaneously the pull rod of the second conveyer is set in motion and each cylinder block travels by 2 m. They are stopped either manually or automatically. The driving mechanism is switched on in intervals of every 3 minutes when the blocks are successively transferred from one operation to the other. After having pas-

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Pulsating conveyer for the trimming and ... S/117/61/000/004/001/007
A004/A101

sed six operations during which the oil sump is trimmed and cleaned the blocks are pushed onto the tilting device where they are turned through 180°, then they are moved onto the second conveyer where the water jacket of the blocks is cleaned. Having passed successively four operations the blocks are moved to the receiving station. One of the main advantages of the new conveyer line is the fact that the hygienic conditions of the operators have been considerably improved, since two ventilation chambers are incorporated in the line in which the dust and small casting heads are sucked off, while big casting heads are thrown on a rubbish conveyer belt. While formerly the output of one worker per shift amounted to 8 - 9 blocks of the DT-54 tractor engine, the output is now 14 - 15 blocks; moreover the blocks of the SMD engine, formerly cleaned on a special platform, are now cleaned together with the DT-54 engine blocks on the same conveyer. There is 1 figure.

Card 2/2

BAKHRUSHIN, Ye.N.

Determining the amount of rock pressure on supports in the face area depending on its width and time length of supporting. Izv. vys. ucheb. zav.; tsvet. met. 8 no.5:12-16 '65.

(MIRA 18:10)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra razrabotki mestorozhdeniy poleznykh iskopayemykh.

BAKHRUSHIN, Ye.N.:

Upraise mining practices in Swedish mines; from data in foreign publications. Izv. vys. ucheb. zav.; tsvet. met. 5 no.2:162-166 '62. (MIRA 15:3)

(Sweden--Mining engineering)

MAKHRUSHIN, Ye.N.

Investigating the possibility of ventilating uprise shafts through boreholes. Izv. vys. ucheb. zav.; tsvet. met. 4 no.3: 19-21 '61. (MIRA 15:1)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra razrabotki mestorozhdeniy poleznykh iskopayemykh.
(Mine ventilation)

BAKHRUSHIN, Ye.N.

Level trenches in the top slicing cover caving method. Izv. vys. ucheb. zav.; tsvet. met. 6 no.4:10-16 '63. (MIRA 16:8)

1. Severokavkazskiy gornometallurgicheskiy institut, kafedra razrabotki mestorozhdeniy poleznykh iskopayemykh.
(Mining engineering)

SULAKVELIDZE, B.; TETERIS, H.[translator]; BAHS, G., red.; ZAGARS, A., tekhn. red.

[Hoisting, coveying, and excavating machinery] Colsanas, transporta un zemes darbu masinas. Riga, Latvijas Valsts izdevnieciba, 1961. 241 p. Translated by H.Teteris. (MIRA 15:7)
(Hoisting machinery) (Conveying machinery)
(Excavating machinery)

BAKHSHALIYEV, Yu.F.; SNESAR', A.M.

Miners of the Dalvostugol' Combine struggle to carry out the resolutions of the 22d Congress of the CPSU. Ugol' 37 no.8: 14-17 Ag '62. (MIRA 15:9)

1. Nachal'nik kombinata Dal'vostugol' (for Bakhshaliyev).
2. Starshiy inzh. proizvodstvenno-tekhnicheskogo otdeleniya kombinata Dal'vostugol' (for Snesar').
(Raichikhinsk Basin--Coal mines and mining--Labor productivity)

KHANINA, TS.G.; TREYGER, N.B.; GORYSHNIK, I.Sh.; BAKHSHINOVA, G.P.

Using liquid A-class bitumen in pavements. Avt.dor. 28 no.11:10-11 N '65. (MIRA 18:11)

MEKHTIYEV, S.D.; SEIDOV, N.M.; BAKHSHIZADE, A.A.; KAMBAROV, Yu.G.

Production of terephthalic acid. Azerb.khim.zhur. no.4:33-39 '63.
(MIRA 17:2)

BAKHSHINYAN, G. I., Cand Agr Sci -- "Condition and means of strengthening the fodder base in certain regions of the West Georgian subtropical zone." Yerevan, 1961. (Com of the Council of Ministers ArSSR on Higher and Sec Spec Ed. Yerevan Zoovet Inst) (KL, 8-61, 252)

ALEKSASHKIN, A.V.; BAKHSHIYAN, F.A., doktor fiz.-matem. nauk, prof., red.; TAL'SKIY, D.A., red.; YEZHOVA, L.L., tekhn. red.

[Application of double integrals]Prilozhenie dvoinogo integrala. Lektsiia vtoraia. Pod red.F.A.Bakhshiiana. Moskva, Gos. izd-vo "Vysshaia shkola," 1960. 26 p. (MIRA 16:3)
(Integrals, Multiple)

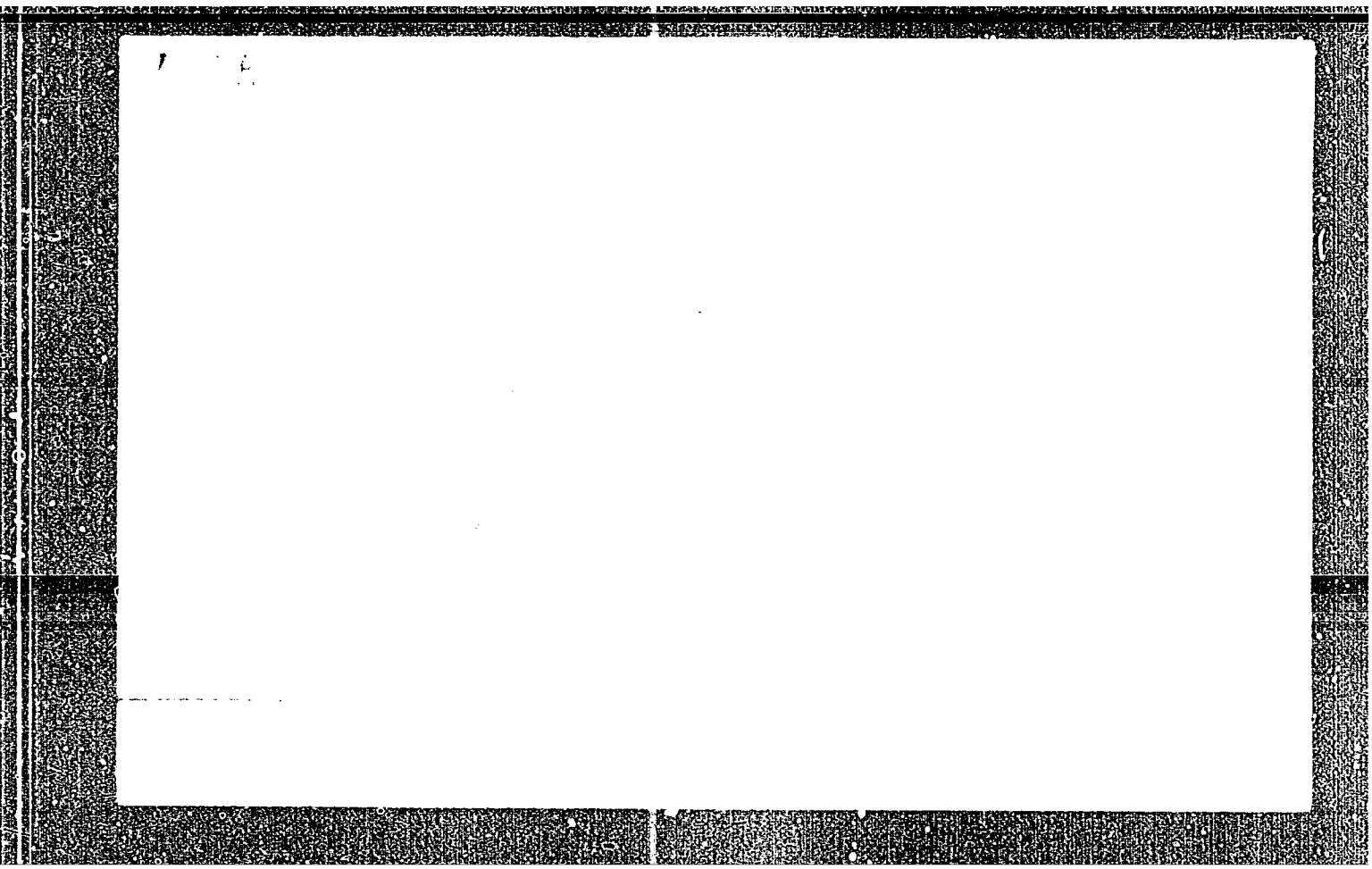
BAKHSHIYAN, F.A. (Moskva); MOISEYEVA, R.S. (Moskva)

Some nonlinear problems of the motion of a viscous plastic medium. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr. no.3:170-174 My-Je '63. (MIRA 16:8)

(Dynamics)

SOBOLEV, Nikolay Andreyevich; BAKHSHIYAN, F.A., doktor fiz.-mat. nauk, prof., otv. red.; GONCHAROVA, L.V.,

[Elements of vector algebra; textbook for a course in higher mathematics] Elementy vektornoi algebry; uchebnoe posobie po kursu vysshei matematiki. Moskva, Vses. zaochnyi politekhn. in-t, 1961. 46 p. (MIRA 17:10)



BAKHSHIYAN, F. A.

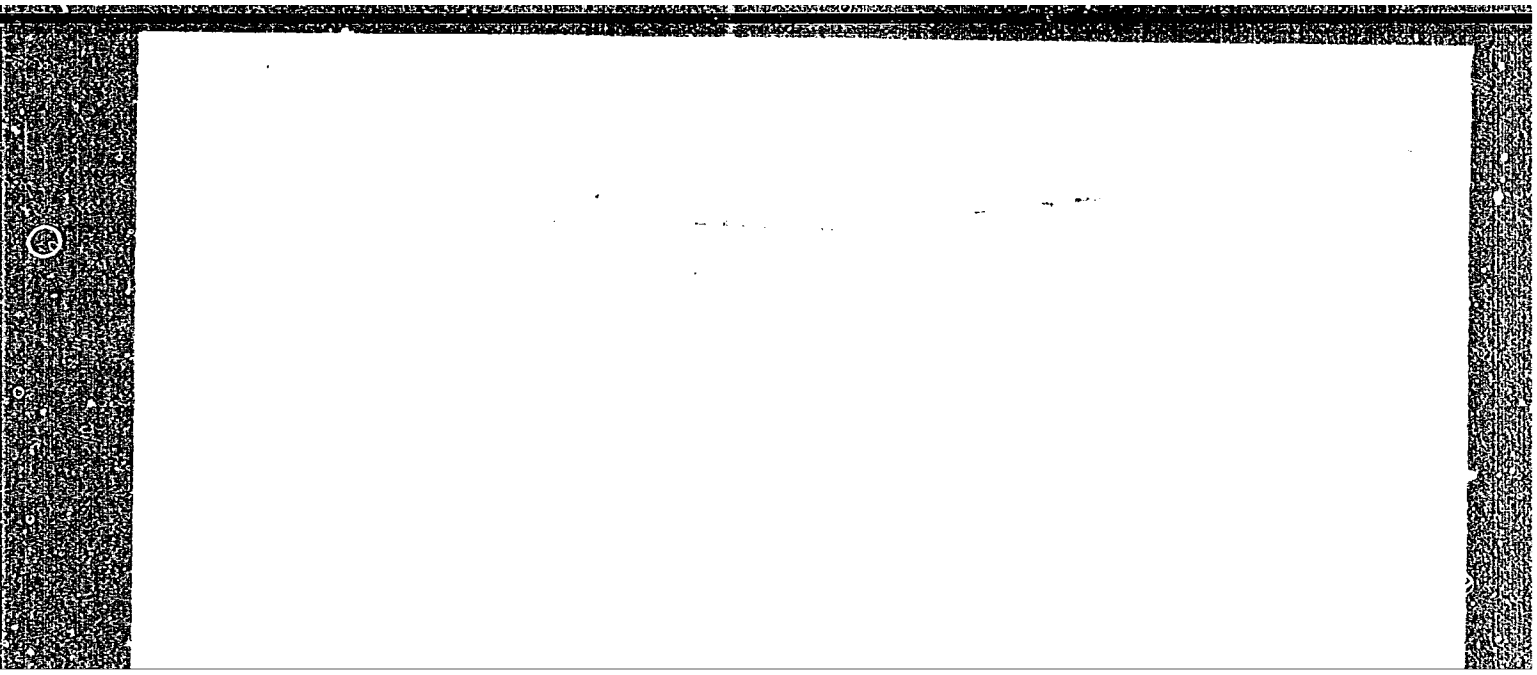
USSR/Mathematics - Approximation Jul/Aug 50
Physics - Armor Piercing

"Approximate Solution of Certain Problems of Nonstationary Motion of A Viscoplastic Medium," A. M. Kochetkov, Inst of Mech, Acad Sci USSR, Moscow

"Priklad Matemat i Mekh" Vol XIV, NO 4

Considers two subject probelms: (a) problem of blow by hard cylinder on plate as originally studied by F. A. Bakhshiyan in "Viscoplastic Flow in a Blow of a Cylinder on a Plate" in "Priklad Matemat i Mekh" Vol XII, No 1, 1948, and (b) problem of rotary motion of viscoplastic medium. Submitted 3 Apr 50.

166T46



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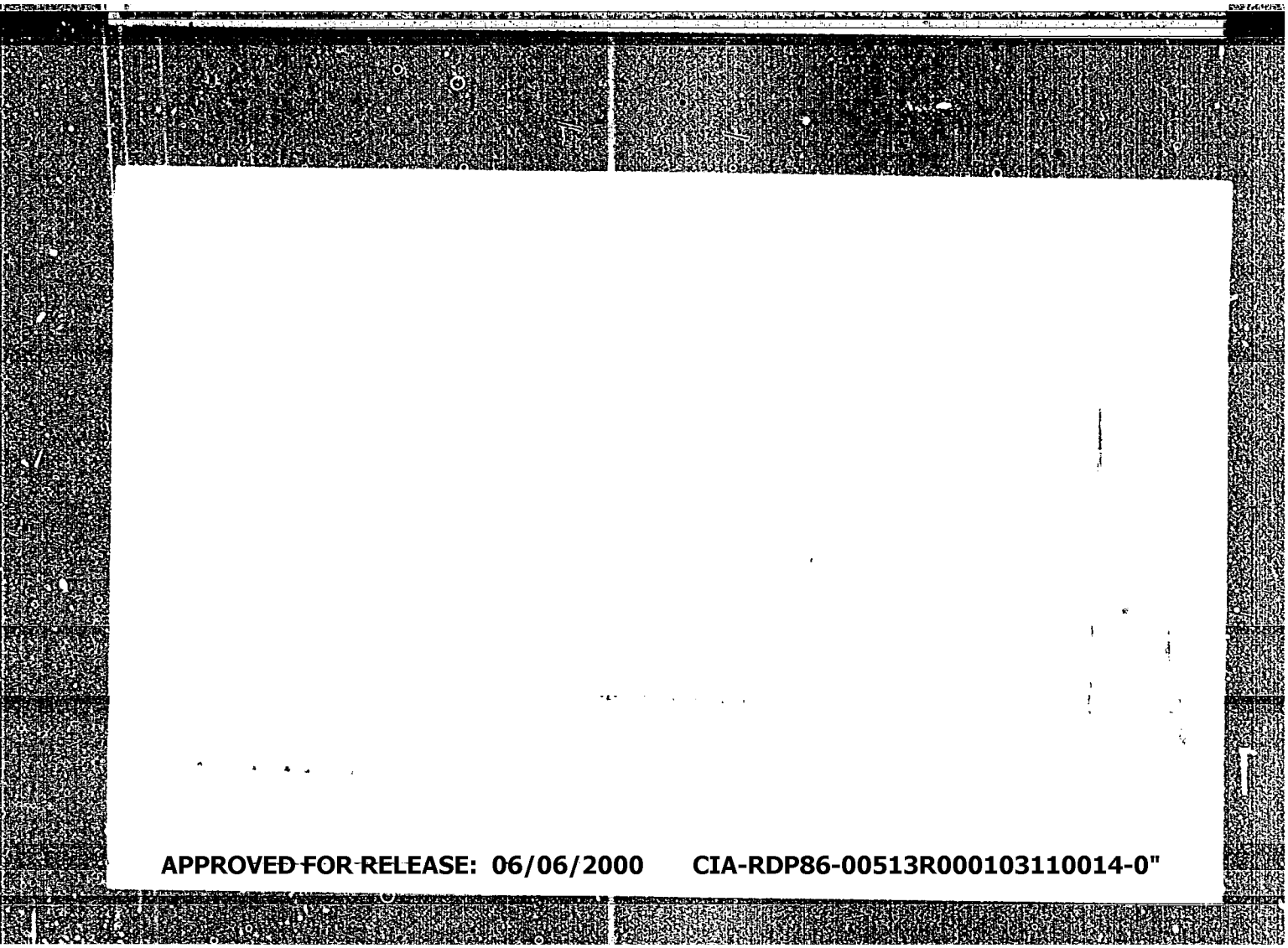
relationships. The solution is given when the sphere is rim



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ZVEREV, Anatoliy Vladimirovich; BAKHSHIYAN, F.A., prof., otv.red.; BANK, I.I., red.izd-va; BOBROV, P.O., tekhn.red.

[Fourier's series and integrals; lecture for students of technical correspondence colleges] Riady Fur'e i integral Fur'e; lektsiia dlia studentov zaochnykh VTUZov. Pod red. F.A. Bakhshiiana. Moskva, 1958. 46 p. (MIRA 12:2)
(Fourier's series)

FUKS, Boris Abramovich, prof.; BAKHSHIYAN, F.A., prof.; ANDRIYEVSKIY, F.P., dotsent; MIROSHKOV, R.K., dotsent; NAGAYEVA, V.M., dotsent; SOBOLEV, N.A., dotsent; SOKOLOV, A.M., dotsent; SHAPIRO, Z.Ya., dotsent; SHUSHARA, G.N., dotsent; KAPLAN, I.B., starshiy prepodavatel'; POLOZKOV, A.P., starshiy prepodavatel'; POLOZKOV, D.P., starshiy prepodavatel'; TOPAZOV, N.G., starshiy prepodavatel'; SHCHERBAKOV, S.S., starshiy prepodavatel'; Prinimali uchastiye: GOL'DENVEYZER, A.L., prof.; BARANENKOV, G.S., dotsent; BERMAN, Ya.R., dotsent; LUNTS, G.L., dotsent; SHESTAKOV, A.A., dotsent; GMURMAN, V.Ye., starshiy prepodavatel'; Rozental', M.I., assistent; SOKOLOVA, L.A., assistent. ROZANOVA, G.K., red.izd-va; KUZ'MINA, N.S., tekhn.red. (Continued on next card)

FUKS, Boris Abramovich--(continued) Card 2.

[Higher mathematics; methodological instructions and control assignments for the students of correspondence technical schools of university level] Vysshaia matematika; metodicheskie ukazaniia i kontrol'nye zadaniia dlia studentov zaochnykh vysshikh tekhnicheskikh uchebnykh zavedenii. Izd.9. Pod red. B.A.Fuksa. Moskva, Gos.izd-vo "Sovetskaia nauka," 1958. 179 p. (MIRA 12:9)

1. Russia (1923- U.S.S.R.) Ministerstvo vysshego obrazovaniya. Metodicheskoye upravleniye.

(Mathematics--Study and teaching)

ALEKSASHKIN, Aleksandr Vladimirovich; BAKHSHIYAN, F.A., prof., doktor fiziko-matem.nauk, red.; ARTEMOVA, T.I., red.izd-va; SAGITULLINA, R.I., tekhn.red.

[Double integral and change of the order of integration; lecture No.1] Dvoinoi integral i izmenenie poriadka integrirovaniia; lektsiia pervaia. Pod red. F.A.Bakhshiiana. Moskva, Vses.zaochnyi politekhn. in-t, 1959. 19 p. (MIRA 14:1)
(Integrals)

25(5) SOV/28-59-2-24/26

AUTHORS: Bozhukov, B.P., Chief of the OTK at the "Frezer" Plant; Bakhshiyan, F.A., Doctor of Technical Sciences, Professor; Britkin, A.S., Doctor of Technical Sciences, Professor; Kokhtev, A., Engineer.

TITLE: A Valuable Textbook for Engineers (Tsennoye posobiye dlya Inzhenerov)

PERIODICAL: Standartizatsiya, 1959, Nr 2, pp 60-61 (USSR)

ABSTRACT: The book by A.M. Dlin, "Mathematical Statistics in Engineering" ("Matematicheskaya statistika v tekhnike") is reviewed in this article.

Card 1/1

ZAPOROZHETS, Grigoriy Ivanovich; BAKHSHIYAN, F.A., red.; SELIVERSTOVA, A.I., red. izd-va; MURASHOVA, V.A., tekhn. red.

[Textbook for solving problems in mathematical analysis] Rukovodstvo k resheniiu zadach po matematicheskomu analizu. Moskva, Gos. izd-vo "Vysshaia shkola," 1961. 403 p. (MIRA 15:2)
(Mathematical analysis)

L 28351-66 EWP(j)/EWT(l)/EWT(m) IJP(c) RM
ACC NR: AP5027664 SOURCE CODE: UR/0051/65/019/005/0698/0708

AUTHOR: Bakhshiyev, N. G.; Piterskaya, I. V. 21 B

ORG: none

TITLE: Universal intermolecular reactions and their effect on the position of electron spectra of molecules in two-component solutions . X. Study of the absorption and fluorescence spectra of phthalamide in a wide temperature range (20-300C)

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1965, 698-708

TOPIC TAGS: intermolecular complex, electron spectrum, solution property, heat effect, fluorescence spectrum

ABSTRACT: The results are given of measuring at 20-300C the fluorescence spectra of six phthalamide compounds (4-amino; 3-amino; 3 monomethyl amino; 3,6-diamino; 3,6-diacetylamino; and 3,6-tetramethyldiaminophthalamides) dissolved in solvents variable chemical and physical properties (benzene, ethylacetate, isoamyl alcohol, acetone, anisole, carbon tetrachloride, pyridine, toluene, and dioxolane). A

Card 1/2 UDC: 539.196.3

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ACC NR: AP5027664

comparison was made of the experimental data with the theory advanced by the author on the effect of universal intermolecular reactions on the position of electron spectra of molecules in 2-component solutions. The experimental data were in good quantitative agreement with the theory; there is a complete parallelism between the dependence of the character of the spectra on the temperature on the one hand and the effect of various solvents at room temperature on the other hand. The effect of temperature on the position of the spectra is expressed through an alteration in the solvent properties, i.e., by changes in the energy of the intermolecular reaction. Orig. art. has: 1 formula, 4 tables and 4 fig.

SUB CODE: 20/ SUBM DATE: 09Jun64/ ORIG REF: 020/ OTH REF: 006

Card 2/2 CC

BAKHSHIYAN, P. A

PA 16T75

USSR/Drilling Machinery May 1947
Steam thermodynamics

"Characteristic Curves of Recently Designed Steam Drilling Machines," P. A. Bakhshiyan, 7 pp.

"Energeticheskiy Byulleten'" No 5

Mathematical discussion illustrated with formulae, graphs, and tables of curves showing the relation between torque and number of revolutions for various cut-offs, curves showing the relation of steam expenditure for 1 horse-power hour to number of revolutions for various cut-offs, and curves showing the relation of torque to number of revolutions with a constant expenditure of steam. 16T75

BAKHSHIYAN, Ts. A.

USSR/Petroleum Industry
Drills, Oil Well

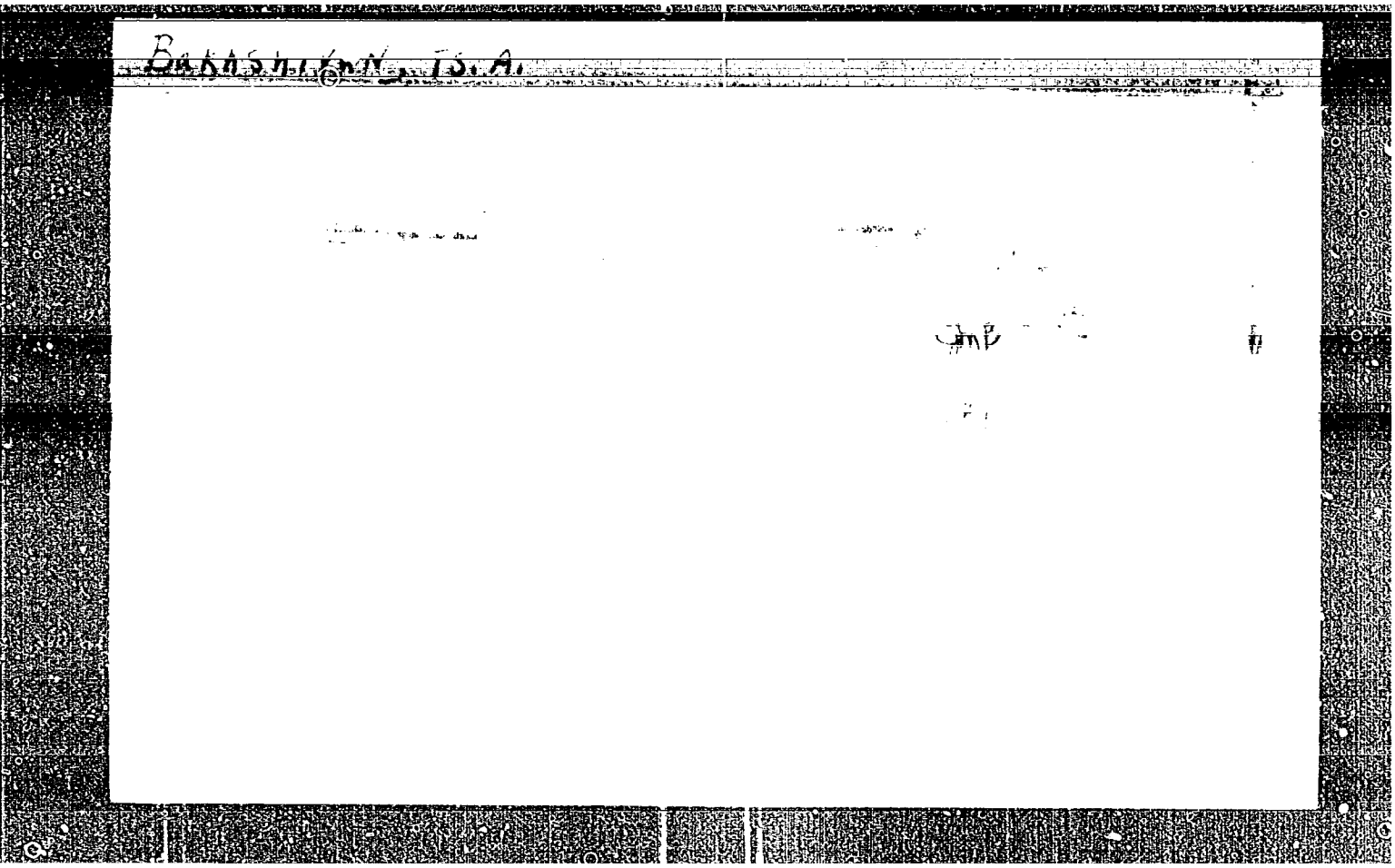
Jan 49

"The Drilling Assembly With a Built-In Heating Unit, BTU-300," Ts. A. Bakhshiyan, S. G. Simonyan, Giproneftemashvostok, 7 pp

"Energet Byul" No 1

Designed and manufactured by Giproneftemashvostok. Test model was installed at Yelshansk petroleum enterprise, and was to have been tested during winter of 1948 - 1949. Gives basic characteristics of equipment. Tabulates results of factory tests on the drill. Several cutaway sketches show heating plant of equipment.

33/49T95



BAKHSHIYAN, TS.A.

Determining the initial parameters in designing petroleum refinery furnaces. Khim.i tekh.topl. no.11:65-72 N '56. (MLRA 9:11)

1. Giproneftemash.

(Furnaces) (Petroleum--Refining)

BAKHSHIYAN, TS.A.

Panel burners for furnaces and boilers. Gaz.prom. no.2:8-10
F '57. (MLRA 10:3)
(Gas burners)

BAKHSHIYAN, Ts. A., (Eng.)

"Panel Burners for Furnaces and Boilers Petroleum Refineries"

(Theory and Practice of Gas Combustion; Transactions of a Scientific and Technical Meeting) Leningrad, Gostoptekhizdat, 1958. 343 p.

Бахшиян, Ts. A.

AUTHOR: Bakhshiyan, Ts. A. 65-2-5/12

TITLE: The Degree of Utilisation of the Heating Surface of Heating Tubes in Petroleum Processing Furnaces. (O stepeni ispol'zovaniya poverkhnosti nagreva radiatsionnykh trub neftezavodskikh pechey).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.2. pp. 28 - 33. (USSR).

ABSTRACT: The limit above which the thermal intensity cannot be increased is determined by the maximum permissible temperature of the walls of the heated tubes. In refineries this temperature is influenced by the degree of coke formation or by the method of heating the product, or - but seldom, - by the strength of the tube material. Equations for calculating the permissible thermal intensity are given. Fig.1 gives a diagram of the furnace of Mosneftezavod. The efficiency of utilising heating pipes in furnaces used for petroleum processing is discussed. It is pointed out that in existing furnaces, due to poor distribution of heat along the heating surface, only a small proportion of the surface is heated to a maximum permissible temperature while the remaining part of the surface is operated much below the permissible load (10 - 30%

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The Degree of Utilisation of the Heating Surface of Heating Tubes in Petroleum Processing Furnaces.

of the load). The basic index of efficiency of screened furnaces is the degree of utilisation of the heating surface η i.e. the ratio of the actual mean thermal load to the mean permissible load. The existing furnaces operate at η = 0.2 to 0.3 and only in individual sectors η = 0.55. In designing furnaces for heating petroleum products one should not aim to achieve an equal distribution of the thermal load along the whole surface but at a permissible load, i.e. a maximum permissible amount of heat should be transferred to each tube. This will increase the degree of utilisation η more than twice, and therefore, the surface area of the tube can be decreased in the same proportion. There are 5 Figures and 9 Russian References.

ASSOCIATION: Giproneftemash

AVAILABLE: Library of Congress.

Card 2/2

92-58-3-22/32

AUTHOR: Bakhshiyan, Ts.A., Staff Member, Giproneftemash

TITLE: Industrial Flameless Pipe Furnace with Radiant Walls (Promyshlenneya trubchataya pech' besplamennogo goreniya s izluchayushchimi stenami)

PERIODICAL: Neftyanik, 1958, Nr 3, pp 22-24 (USSR)

ABSTRACT: The author states that a new efficient pipe furnace for petroleum processing has been developed by the State Design and Scientific Research Institute for Petroleum Machinery (Fig. 1). Although the heat capacity of the new flameless pipe furnace is the same as that of the conventional furnace, the size of the new furnace is smaller; it requires less metal and its construction cost is lower. The combustion chamber of the new furnace has

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radiant walls with panel burners, a two-side bank with radiant tubes and a convection tube cluster (Fig. 2). Radiant walls are installed at a distance of 1,000 mm. from pipes and two rows of tubes forming a bank are located between these walls. The height of the wall is 2 m., its length 11 m., and the thickness of walls 230 mm. Every wall has four rows of gas burners with 22 burners in each row. There are 176 burners in all. Gas burns in the conduits, the total number of which is 11,836. In the new furnace the emmission of heat is 2 to 3 times greater than that in conventional furnaces. Moreover, the emmission of heat can be regulated in the new furnace as desired. Because of the regulation of heat emmission, the temperature of all tubes is almost equal. It is clear, therefore, that the new flameless pipe furnace with radiant walls has a number of advantages. After studying the design of the new furnace, the State Scientific Research Committee of the Council of Ministers of the USSR resolved to introduce this furnace in the petroleum refining industry and recommended its use inasmuch as possible. There is one photograph of the

flameless pipe furnace with radiant walls (Fig. 1) and a sketch showing the flow of the crude stock and flue gases in the new furnace (Fig. 2).

ASSOCIATION:Giproneftemash

AVAILABLE: Library of Congress

Card 3/3

BAKHSHIYAN, TS.A.

Industrial tubular furnaces with flameless combustion and radiating walls. Biul. tekh.-ekon. inform. no.3:37-39 '58. (MIRA 11:6)
(Furnaces)

SOV/65-58-5-2/14

AUTHORS: Bakhshiyan, Ts. A. and Sycheva, A. M.

TITLE: Selection of Tubular Shell Heat Exchangers for Working Under Optimum Conditions. (Vybor kozhukhotrubchatykh teploobmennykh apparatov po optimal'nym rezhimam raboty)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr.5. pp. 5 - 11. (USSR).

ABSTRACT: One method of intensifying the efficiency of heat exchangers lies in increasing the velocity of the current which is linked on the one hand with increasing the coefficient of heat emission, and on the other hand with increased pressure losses. Values for the optimum rates were determined by technical and economic analysis. The values of the rate of the movement of the current, the quantity of transfer heat, and the coefficient of heat emission were compared with values for pressure losses, as well as losses in efficiency and capital losses. The heat exchanger was calculated for the following conditions: (1) the transfer of cold petroleum along the tubular space (inlet temperature 10°C, heating), (2) transfer of heated petroleum along the tubular space (inlet temperature 128°C, heating), (3) transfer of ligroin along the inter-tubular space (inlet temperature 120°C, heating), (4) transfer of petrol along the tubular

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Selection of Tubular Shell Heat Exchangers for Working Under Optimum Conditions.

space (inlet temperature 160°C, cooling). The calculations were carried out for the tubular and inter-tubular space. The dependence of the value of unit heat and the velocity of the current - Fig.1, and the dependence of the optimum velocity and the viscosity of the product - Fig.2. These figures show that the optimum velocities are in inverse proportion to the viscosity of the products. For cold petroleum the optimum velocity = 0.8 - 0.9 m/second. For heated petroleum and light products 1 - 1.2 m/seconds, and for the light fractions themselves (petrol) = 1.5 m/second. The efficiency of a heat exchanger can be increased by increasing the velocity in the tubular and inter-tubular spaces. In the tubular space the velocity can be increased by increasing the number of runs. In the inter-tubular space by (1) decreasing the distance between the transverse baffle plates, (2) by decreasing the space in the transverse baffle plates between the openings for the tubes and the tubes themselves, and also between the transverse baffle plates and the body, (3) by decreasing the segmental cuts, (4) by fixing longitudinal

Selection of Tubular Shell Heat Exchangers for Working Under Optimum Conditions.

baffle plates, and (5) by selecting heat exchangers with a smaller diameter. Recommended constructions are shown in Fig.4b and 4g. The following methods are recommended for increasing the surface of heating and for intensifying the heat emission: (a) increasing the length of the tubes from 6 - 9 m, (b) decreasing the diameter of the tubes to 20 mm (for pure products), (c) ribbing of the tubes, (Fig.4A), (d) the distribution of the tubes in an alternating order (Fig.4B). The dependence of the optimum diameter of the apparatus on the rate of the consumption for tubular and inter-tubular spaces is given (compare Fig.3). The required diameter of the heat exchanger can be found (for heat exchangers working on one run having segmental baffle plates, two runs, one run with a longitudinal vertical baffle plate along the body of the heat exchanger with inclined tubes). There is 1 Table, 5 Figures and 6 Soviet references.

ASSOCIATION: Giproneftemash.

BAKHSHIYAN, TS.A.; ZARUBINA, L.V.

Determining optimum temperature of flue gases of tubular furnaces, air and water heaters. Khim. i tekh.topl. i masel 4 no.3:36-38 Mr '59. (MIRA 12:4)

1. Giproneftemash.
(Heat engineering)

BAKHSHIYAN, TS.,A., inzh.; BAKLASHOV, V.Ye., inzh.

Furnaces with radiating walls made of flameless panel burners. Khim. mash. no.6:4-6 N-D '60. (MIRA 13:11)
(Furnaces--Construction)

BAKHSHIYAN, TS.A.

Types and sizes of the rows of tubestill heaters with radiating combustion chamber walls consisting of flameless panel burners, and their design. Trudy IGI 16:412-423 '61. (MIRA 16:7)
(Burners) (Furnaces, Heat treating)

LIBEROV, B.I.; BAKHSHIYAN, TS.A.; SHVETS, Ye.M.

Rotary nozzles for liquid fuel burning. Prom.energ. 17 no.1:21-24 Ja '62. (MIRA 14:12)
(Burners)

VITENBERG, A.S.; BAKHSHIYAN, TS.A.; LEONTOVICH, V.Ye.; LETNIKOV, Yu.S.

Gas furnace for the heating of tubular blanks. Stal' 22 no.3:279 Mr '62. (MIRA 15:3)
(Furnaces, Heating—Patents)

BAKHSHIYEV, B.A.

Large-photograph fluorography in polyclinic and its significance for the detection of volatile (eosinophilic) infiltrates. Aserb. med. zhur. 42 no.4:47-52 Ap '65. (MIRA 18:9)

BAKHSHIYEV, B. A.

Utilization of large frame fluorography for detecting cancer of the lung in polyclinics. Vop. onk. 8 no.7:51-56 '62.
(MIRA 15:7)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstv zdravookhraneniya RSFSR (dir. - prof. I. G. Lagunova) i ob"yedinennoy poliklinik No. 11 Timiryazevskogo rayona g. Moskvy (gl. vrach - O. N. Levkovskaya)

(LUNGS--CANCER) (DIAGNOSIS, FLUOROSCOPIC)

BAKHSHIYEV, B.A.

Detection of pathology of the thoracic organs in outpatient clinics using large-scale fluorography. Azerb. med. zhur. no.10:49-52 O '62. (MIRA 17:10)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgenoradiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. - prof. I.G. Lagunova) i ob"yedinennoy poliklinik No.11 Timiryazevskogo rayona Moskvy (glavnyy vrach - O.N. Levkovskaya).

BAKHSHIYEV, B.A., kand. med. nauk

Technique and method used in large-photograph fluorography in polyclinics. Azerb. med. zhur. 41 no. 11:45-50 N '64.
(MIRA 18:12)

1. Iz Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. - prof. I.G. Lagunova) i Azerbaydzhanskogo gosudarstvennogo meditsinskogo instituta imeni Narimanova (rektor - prof. Kh.A. Gasanov). Submitted Jan. 14, 1964.

BAKHSHIYEV, B.A., kand. med. nauk

Method of artificial contrasting in X-ray diagnosis of diseases of the thyroid gland. Azerb. med. zhur. 42 no. 7:30-36 Jl '65 (MIRA 19:1)

1. Kafedry rentgenologii s meditsinskoy radiologiyey (zav. - dotsent V.I. Abgarov) Azerbaydzhanskogo meditsinskogo instituta imeni Narimanova (rektor - prof. Kh.A. Gasanov).

BAKHSHIYEV, D.

V.I. Lenin on the participation of the masses in the management of public production. Sov. profsoiuzy 5 no.9:15-22 S '57.
(Russia--Economic policy) (MLRA 10:9)
(Trade Unions)

RAKHSHIYEV, D.

Lenin's ideas on the development program of communism. Sov. profsoiuzy 7 no.12:5-9 Je '59. (MIRA 12:9)
(Lenin, Vladimir Il'ich, 1870-1924)

BAKHSHIYEV, N.G.

Reflection technique for the determination of optical constants of uniaxial absorbing crystals. Opt.i spektr. 1 no.5:685-689 S '56. (MLRA 9:11)

(Crystals--Optical properties)

BAKHSHIYEV, N.G.

PRIKHOT'KO, A.F.

24(7) P3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Uzer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lavrinenko, O.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kormitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

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Card 2/30

Bakhshiyev, N. O.

51-6-20/26

AUTHOR: Bakhshiyev, N. O.

TITLE: A New Principle of Spectrometry. (Novyy printsip spektrometrii.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 816-818. (USSR)

ABSTRACT: Narrow spectral regions are normally separated out by means of dispersion (prisms or diffraction gratings). In both cases spatial separation of beams of various wavelengths is obtained. This note proposes a new method which combines monochromatization and recording of spectra into one process without using either prisms or diffraction gratings. The method is based on amplitude modulation of light. The modulation frequencies are a monotonic function of the wavelength of light in the whole spectral region studied. The receiving and amplifying apparatus performs two functions at the same time: recording and monochromatization. The proposed apparatus (an actual spectrometer using this

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AUTHOR: Bakhshiyev, N. G. 51-6-21/26

TITLE: On the Problem of Determination of Optical Constants from Reflection. (K voprosu ob opredelenii opticheskikh postoyannykh po otrazheniyu.)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.II, Nr.6, pp. 818-819. (USSR)

ABSTRACT: A new method of determination of the optical constants of isotropic absorbing substances was developed by Conn and Eaton (Ref.1) and Beattie (Ref.2). This method is based on the measurement of reflection of plane-polarised light from a sample at a fixed angle of incidence using a polariser and an analyser (see figure). This method gives the magnitude of the phase-shift δ between the electric vector components as well as the ratio of intensities of these two components. Four measurements of intensity are required at four positions of the polariser ($0, \pm \pi/4$ and $\pi/2$). The analyser is kept fixed. The optical constants n and k are deduced from δ and the ratio of the electric vector components.

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AUTHORS: Neporent, B.S. and Bakshiyev, N.G. SOV/51-5-6-2/19

TITLE: Intensities in the Spectra of Polyatomic Molecules (Intensivnosti v spektrakh mnogoatomnykh molekul)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 6, pp 634-645 (USSR)

ABSTRACT: The authors discuss the effect of a solvent on the magnitude of the absorption integral and the excited-state lifetime, and on their relationship in polyatomic molecules. It is shown that the concept of the integral intensity of electron transitions may be applied unreservedly only to complex polyatomic molecules. For simple polyatomic molecules the authors find conditions and limits within which this integral intensity still retains its physical sense. It is also shown that a solvent may be regarded as an external dielectric medium in the case of complex and some simple molecules. Various models of the system consisting of an absorbing molecule and a solvent are considered and it is found that the model in which a solvent is regarded as an isotropic medium which "impregnates" a molecule is untenable. Corrections are found necessary for the effect of the internal field in a solution; the correction applied

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may be that of Kravets (Ref 1) which is based on Lorentz's theory or it may include the reactive field. The authors discuss their own experimental values (Ref 19) of the absorption integral and the excited-state lifetime of vapours and solutions of phthalimide (I) and five of its derivatives: 3-acelylaminophthalimide (II), 3-aminophthalimide (III), 3,6-diaminophthalimide (IV), 3-dimethylamino-6-aminophthalimide (V) and 3,6-tetramethyldiamino-phthalimide (VI). Only the last three (IV-VI) were regarded by the authors as complex molecules. The absorption and fluorescence spectra of vapours (thin curves) and ethyl-alcohol solutions (thick curves) of substances I-VI, together with their structural formulae, are given in Fig 1. The absorption and fluorescence spectra were constructed using the data of Ref 19 and are normalized to equal areas. Figs 2 and 3 show theoretical and experimental values of the corrections to the absorption integral, which allow for the effect of solvents. Table 1 gives the oscillator strengths for the six substances discussed (experimental data taken from Ref 19) both as vapours and as solutions. The following solvents were used: methyl alcohol, water, ether, n-heptane, dioxane, benzene, heptane + benzene, ethyl alcohol.

Intensities in the Spectra of Polyatomic Molecules

Figs 4 and 5 show the corrections to the excited-state lifetimes which allow for the effect of solvents. Table 2 lists these lifetimes for substances II-VI (phthalimide does not fluoresce), both as vapours and as solutions (solvents as above). It was found that the theoretical relationships agree with the experimental values when Onsager's reactive field is allowed for. Somewhat poorer agreement is obtained using Lorentz's correction. There are 5 figures, 2 tables and 34 references, 13 of which are Soviet, 9 American, 8 German, 2 English, 1 French and 1 Dutch.

SUBMITTED: January 7, 1958

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SOV/51-5-6-3/19

AUTHOR: Bakhshiyev, N.G.

TITLE: Internal Field and the Absorption Band Intensities in Solutions (Vnutrenneye pole i intensivnosti polos pogloshcheniya v rastvorakh)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol 5, Nr 6, pp 646-654 (USSR)

ABSTRACT: A general form of the relationship between the internal field and the absorption band intensity is discussed in the case of solutions. A simplified expression, based on the Onsager--Böttcher theory, is obtained for the correction for the effect of a solvent. The oscillator strength is found to contain a certain parameter $\bar{\alpha}_j/r_j^3$, where $\bar{\alpha}_j$ is the mean value of the real part of complex polarizability of an absorbing molecule in the region of the latter's absorption band, and r_j is the radius of a sphere of action of the internal field at this molecule. According to Onsager the parameter $\bar{\alpha}_j/r_j^3$ determines the change in absorption on transition from vapours to solutions. The results are applied to the electron absorption spectra of seven aromatics: anthracene (I), phthalimide (II) and five phthalimide derivatives: - 3-acetylaminophthalimide (III), 3-aminophthalimide (IV), 3,6-diaminophthalimide (V), 3-dimethylamino-6-aminophthalimide (VI) and 3,6-tetramethyldiaminophthalimide (VII). Non-polar solvents were

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used: benzene, n-heptane and their mixtures. Fig 1 shows the shift of the absorption spectrum of 3-dimethylamino-6-aminophthalimide in benzene (curve 1) compared with the spectrum of a n-heptane solution (curve 2). Figs 2 and 3 and a table on p 653 give the values of the parameter a_i/r_i^3 for the seven substances discussed in this paper. The author thanks B.S. Neporent for his help and advice. There are 3 figures, 1 table and 16 references, 4 of which are Soviet, 4 American, 4 German, 2 Dutch, 1 English and 1 French.

SUBMITTED: January 31, 1958

24(7)

AUTHOR: Bakhshiyev, N.G.

SOV/48-22-11-24/33

TITLE: Internal Field and the Properties of the Spectra of Complex Molecules in Solutions (Vnutrennyaya pole i svoystva spektrov slozhnykh molekul v rastvorakh)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 11, pp 1387-1390 (USSR)

ABSTRACT: Recently a number of theoretical studies were published in which it was attempted to establish a connection between the spacing of the electron spectra of the molecules and the dielectric constant ε and the index of refraction n of the medium. No experimental validation of the correctness of the formulae for the degree of displacement of the maxima of the absorption- and luminescence bands has hitherto been presented. This may be, above all, due to the fact that it proves to be very difficult or even impossible to determine the 0-0 frequencies directly. For this reason the overwhelming majority of experimental papers limit themselves to an investigation of the influence of the solvent upon the maximum displacement. It is known, however, that for wide electron vibration bands the position of the maxi-

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mum cannot be invested with a specific physical meaning, as it is the case with narrow atomic or molecule spectra. Even the more, the position of the maxima of the electron spectra of organic polyatomic molecules is dependent upon various factors. The influence exerted by these factors may vary considerably when shifting to another solvent. This results in a complication of the effect and a veiling of the governing regularities. The author studied the dependence of the position of the 0-0 frequencies upon the physical properties of the solvent with a number of substances, by having recourse to some available theoretical results. Five aromatic compounds from the series of well known phthalimide derivatives: 4-amino phthalimide, 3-amino phthalimide, 3-monomethyl amino phthalimide, 3-dimethyl amino phthalimide, and 3-acetyl amino phthalimide. These substances all exhibit mirror-symmetrical absorption and luminescence spectra which permit to determine reliably the frequency of the electron transition ν_{el}. The course of the function which is specified by formula

Internal Field and the Properties of the Spectra of Complex Molecules in Solutions

$$\Delta\nu_{el} = \frac{c_1}{r^3}\left[\frac{2\varepsilon - 2}{2\varepsilon + 1} + p\,\frac{2n^2 - 2}{2n^2 + 1}\right]; \quad p = \frac{c_4}{c_1} \qquad (2)$$

is plotted in the figures 1 - 3. The results presented demonstrate that the experimental experience gained with respect to the frequency displacement of the electron transitions of a number of complex aromatic compounds in solvents shows a good accordance with theoretical conclusions, which relate the magnitude of displacement to physical parameters of the solvent. The absorption- and luminescence maxima exhibited by the substances under review lend themselves less readily to a coverage by the regularities expressed by equation (2). There are 3 figures, 1 table, and 16 references, 6 of which are Soviet.

ASSOCIATION: Gos. opticheskiy institut imeni S.I.Vavilova
(State Institute of Optics imeni S. I. Vavilov)

24(7)

AUTHORS: Zelinskiy, V. V., Bakhshiyev, N. G. SOV/48-22-11-25/33

TITLE: Discussion of the Lecture Held by N. G. Bakhshiyev (Preniya po dokladu N. G. Bakhshiyeva)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,1958, Vol 22, Nr 11, pp 1390-1390 (USSR)

ABSTRACT: V. V. Zelinskiy made the following remarks: There is every indication to assume that the influence of the solvent upon the structure of the molecule not only results in a displacement of the frequency of the electron transition, but also in a modification of the equilibrium distances. Next he criticises the adoption of the transition frequency as a criterion of the modifications of the spectra. He points to his own lecture, in which he said that the transition frequency may remain unchanged even if the dielectric constant is greatly modified. Hence the transition frequency is not influenced by ε.

N. G. Bakhshiyev answered as follows: It is ostensible that the action of the solvent is not limited to a displacement of the transition frequency, and this is substantiated by

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the information presented. The study of solvent action upon spectra is firstly to be directed toward an investigation of the electron level displacement, which is caused by intermolecular interactions of a dielectric nature. As it is demonstrated by the results of numerous papers those interactions are prevailing in solutions which effect spectral displacements in dissolved molecules.

BAKHSHIYEV, N. G., Cand Phys-Math Sci — (diss) " [illegible] field and properties of electronic spectra of absorption and emission of multiatomic organic molecules in solutions." [illegible], 1959. 12 pp (State Order of Lenin Optical Inst [illegible] im S. I. Vavilov). 150 copies (KL, 39-59,100)

SOV/51-6-2-26/39

AUTHOR: Bakhshiyev, N.G.

TITLE: On the Shape of the Absorption and Emission Bands of Complex Molecules (K voprosu o konture polos pogloshcheniya i ispuskaniya slozhnykh molekul)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 2, pp 250-252 (USSR)

ABSTRACT: Unidimensional models of potential curves constructed for electron-vibrational spectra make it possible to obtain formulae (Refs 1-6) which give the distribution of intensities in the absorption and fluorescence spectra in good agreement with experiment. The present author suggests that the large anharmonicity of the potential functions of complex molecules should be taken into account in calculations of absorption bands. Allowing for anharmonicity he calculates the intensity distribution in an absorption band, using a unidimensional model. The calculations yield a formula given by Eq (1), which is then tested on the absorption spectra of vapours and solutions of phthalimide derivatives. Such a test shows that Eq (1) agrees well with experimental data. Fig 2 shows, by way of example, a long-wavelength absorption band of 3-aminophthalimide in water. The continuous curve represents

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experimental values and the dots were found by calculation using Eq (1). The author concludes that the contours of the continuous absorption and emission bands of complex molecules are determined primarily by the distribution of the vibrational energy, by the form of the potential curves and anharmonicity of the latter. Acknowledgments are made to B.S. Neporent for his advice. There are 2 figures and 6 Soviet references.

SUBMITTED: July 25, 1958

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24(7)

AUTHOR: Bakhshiyev, N.G. SOV/51-7-1-8/27

TITLE: The Internal Field and the Positions of Electronic Absorption and Emission Bands of Multi-Atomic Organic Molecules in Solutions (Vnutrennoye pole i polozheniye elektronnykh polos pogloshcheniya i ispuskaniya mnogoatomnykh organicheskikh molekul v rastvorakh)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 1, pp 52-61 (USSR)

ABSTRACT: The author studied the effect of the solvent on the positions of electronic absorption and fluorescence spectra of the following six phthalimide derivatives: 4-aminophthalimide, 3-acetylaminophthalimide, 3-aminophthalimide, 3-monomethylaminophthalimide, 3-dimethylaminophthalimide and 3,6-diacetylaminophthalimide; all these compounds have absorption spectra which are mirror images of emission spectra. The absorption spectra of solutions were measured using a spectrophotometer SF-4 and the fluorescence spectra were measured with apparatus described by Neporent and Klochkov (Ref 20). The author discusses also the effect of the solvent on the spectra of eight other organic compounds in solution: benzene (2000 and 2600 Å bands), toluene (2600 Å) and chlorobenzene (2600 Å), α-naphthol, β-naphthol, β-methylnaphthalene β-naphthyl methyl ether and anthracene (the data on these compounds

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The Internal Field and the Positions of Electronic Absorption and Emission Bands of Multi-Atomic Organic Molecules in Solutions

were taken from Refs 13, 24-28). Using the data on all the fourteen aromatic compounds listed above, the author shows that the positions of the electronic transition frequency and of the frequency corresponding to the symmetry axis of the mirror-symmetrical absorption and fluorescence bands are in quantitative agreement with deductions from Ooshika, Mataga et al. and McRae's theory (Refs 12-14). This theory relates the positions of the spectra with the static permittivity and the refractive index. The author discusses also changes which occur on excitation in the fourteen molecules listed above as well as their short-range interactions in solutions. Acknowledgment is made to B.S. Neporent. There are 12 figures, 2 tables and 33 references, 15 of which are Soviet 13 English, 3 German and 2 Japanese.

SUBMITTED: July 25, 1958

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PHASE I BOOK EXPLOITATION SOV/5151

Leningrad. Universitet

Molekulyarnaya spektroskopiya (Molecular Spectroscopy) [Leningrad] Izd-vo Leningr. univ., 1960. 198 p. 4,700 copies printed.

Resp. Ed.: F. I. Skripov; Eds.: Ye. V. Shchemeleva and V. D. Plastro; Tech. Ed.: S. D. Vodolagina.

PURPOSE: This collection of articles is intended for scientific workers, instructors and students of physics and chemistry. It may also be used by engineers and technicians employing molecular spectroscopy.

COVERAGE: The collection of articles describes spectroscopic studies of liquids and solutions, and includes data on applied molecular spectroscopy. Individual articles deal with the molecular interaction in solutions, and specifically with the hydrogen bond problem. Works on the optimum utilization of spectral apparatus and on the analytical application of molecular spectroscopy are also included.

Aspects of the structure of high and low molecular compounds and of molecular complexes are also covered. The collection was published in honor of the 70th birthday of Professor Vladimir Mikhaylovich Chulanovskiy, Soviet specialist in molecular spectroscopy and spectral analysis. There are no references.

TABLE OF CONTENTS:

(27)

S/081/62/000/015/001/038
B168/B101

AUTHORS: Neporent, B. S., Bakhshiyev, N. G.

TITLE: Influence of the internal field on the spectral characteristics of polyatomic organic molecules in solutions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 15, 1962, 8-9, abstract 15B24 (Sb. "Molekulyarn. spektroskopiya", L., Leningr. un-t, 1960, 35 - 51)

TEXT: This article gives results from a number of investigations, conducted by the authors during the past few years, into the universal influence of the internal field on various spectral characteristics of polyatomic molecules in solutions, such as intensity of absorption bands and of fluorescence, position of spectra, etc. New expressions were found showing how the value of the absorption integral, the duration of the excited state, and the displacement of the bands on transition from gases to solutions, are related both to the generalized physical characteristics of the solvent (dielectric constant, refraction index) and to various microcharacteristics of the dissolved substance (dipole moments, polarizability, etc.). Exten-

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sive experimental verification of these expressions, taking several dozens of organic molecules of different types as examples, showed that quantitatively they agree well enough with experimental findings. It was concluded from these data that with fair approximation, as regards the complex polyatomic molecules and many simple ones, the action of the solvent on the various properties of the electron spectra can be identified, with the influence of the physical dielectric medium, which alters the size of the internal field acting in the solution on the particle under examination. [Abstracter's note: Complete translation.]

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S/051/60/008/06/006/024
E201/E691

5.4130

AUTHORS: Neporent, B.S. and Bakshiyev, N.G.

TITLE: The Role of Universal and Specific Intermolecular Interactions in the Effect of a Solvent on the Electronic Spectra of Molecules

PERIODICAL: Optika i spektroskopiya, 1960, Vol 8, Nr 6, pp 777-786 (USSR)

ABSTRACT: Intermolecular interactions in solutions are divided by the authors into two main types: universal, due to collective effect on the solute molecule of all the surrounding solvent molecules, and specific, due to individual interactions of the solute molecule with one or more of the surrounding solvent molecules. The universal interactions are "macroscopic" effects of the solvents described by properties such as permittivity, refractive index, dispersion, etc. The specific interactions are affected by the structure of the solvent molecules and are called "microscopic" effects. Internal fields in a solution are used to separate the universal from specific interactions. Numerous and varied experimental data are employed to show the applications of these ideas (Figs 1-7) and a short discussion is given of the published work which does not allow for the collective

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effect of the surrounding medium on the absorption or emission centres. In conclusion the authors point out that only in the ideal case can we separate entirely the universal from specific interactions. In real systems we find continuous transition from pair interactions to collective effects of the surrounding medium on a solute molecule. Nevertheless the basic idea of two types of interaction can be used as a foundation of spectroscopic studies of solutions. There are 7 figures, 1 table and 21 references, of which 10 are Soviet, 8 English, 1 French, 2 German and 2 Japanese.

SUBMITTED: October 17, 1959

Card 2/2

S/051/60/009/01/026/031
E201/E691

AUTHORS: Bakshiyev, N.G. and Mirumyants, S.O.

TITLE: Eighth Conference on Luminescence (Molecular Luminescence and Luminescent Analysis)

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, Nr 1, pp 124-127 (USSR)

ABSTRACT: The Eighth Conference on Luminescence was convened by the Scientific Council on Luminescence, Academy of Sciences of the Byelorussian SSR and by the Physics Institute of the USSR Academy of Sciences. It was held on October 19-24, 1959, in Minsk. The Conference was divided into two sections: (1) molecular luminescence and (2) luminescent analysis. About 120 papers were read at the Conference, the majority of them belonged to the first section. Papers were read by: V.L. Yermolayev and A.N. Teremin (internal transfer of energy in triplet levels of complex molecules), V.L. Yermolayev, I.P. Kotlyar and K.K. Svitashev (probability of internal transition from fluorescent to phosphorescent levels in naphthalene derivatives), V.A. Borgman, I.A. Zhmyreva, V.V. Zelinskiy

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and V.P. Kolobkov (internal transitions in phthalimide derivatives), S.O. Mirumyants and B.S. Neporent (transformation of vibrational energy of excited complex molecules on collision with foreign molecules), V.P. Klochkov (intermolecular interactions of complex organic molecules in the gaseous phase), N.A. Borisevich and V.V. Gruzinskiy (electronic spectra of anthraquinone vapours and solutions), N.A. Borisevich and V.A. Tolkachev (temperature dependence of the fluorescence yield of complex-molecule vapours), B.Ya. Sveshnikov, P.I. Kudryashov, V.I. Shirokov and L.A. Limareva (energy migration, concentration depolarization of luminescence of organic solutions, sensitized fluorescence of solutions), Yu.A. Kurskiy and A.S. Selivanenko (theory of impurity quenching of luminescence in solutions), V.L. Levshin, Ye.G. Baranova and L.V. Krotova (transfer of excitation energy to associates in luminescing solutions of dyes and nature of binding forces in associates), L.V. Levshin and V.A. Bocharova (concentration effects in organic solutions), A.N. Terenin and A.V. Shablya (detection

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of phototransfer of protons using luminescence spectra), G.P. Gurinovich, A.M. Sarzhevskiy and A.N. Sevchenko (polarization of luminescence of complex molecules in liquid and solid solutions), E.V. Shpol'skiy and L.A. Klimova (new data on spectra of aromatic hydrocarbons at 20°K), D.N. Shigorin, N.A. Shcheglov, N.S. Dokunikhin and R.N. Nurmukhamedov (low temperature line spectra of luminescence of anthraquinone halides, thioindigo and its derivatives), T.N. Bolotnikova (spectra of certain aromatic aldehydes and ketones at low temperatures), R.I. Personova (luminescence and absorption spectra of perylene at low temperatures), A.Ya. Khesina (spectroscopy of certain pyrene derivatives in frozen solutions), S.G. Bogomolov, F.D. Pemova and L.I. Kolosova (spectrum of 3,4-benzopyrene dissolved in normal hydrocarbons), A.N. Faydysh, M.T. Shpak, Ye.F. Sheka, V.I. Gribkov, N.D. Zhevandrov, V.M. Agranovich, Yu.V. Konobeyev, V.L. Broude, V.S. Medvedev, Ya.Ya. Kirs, A.I. Laysaar, M.I. Belyy and B.F. Rud'ko (luminescence and other properties of molecular crystals and solid solutions), V.M. Agranovich (theory of excitons

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Eighth Conference on Luminescence (Molecular Luminescence and Luminescent Analysis)

in molecular crystals), Z.A. Chizhikova, I.M. Rozman, Yu.V. Naboykin, V.K. Dobrokhotova, V.V. Uglanova, Sh.D. Khanmagametova, N.D. Zhevandrov and V.I. Gribkov (scintillation properties of organic compounds and luminescence of crystals subjected to hard radiations), M.T. Shpak and Ye.F. Sheka (luminescence of crystalline naphthalene containing small amounts of impurities), Ch.B. Lushchik, N.Ye. Lushchik, G.G. Liyd' and K.K. Shvarts (electronic-vibrational processes in luminescence centres of solid and liquid solutions of hydrogen-like ions), A.S. Cherkasov (experimental results on the effect of solvents and temperature on fluorescence of acetylanthracenes), N.G. Bakhshiyev (dielectric effects and properties of electronic spectra of multiatomic organic molecules in solutions), I.A. Zhmyreva, V.V. Zelinskiy, V.P. Kolobkov, A.A. Kochemirovskiy and I.I. Reznikova (fluorescence spectra of aromatic compounds in a wide range of solvents), L.G. Pikulik and A.N. Sevchenko (temperature dependences of the quantum yield of fluorescence of certain phthalimides in various solvents),

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Eighth Conference on Luminescence (Molecular Luminescence and Luminescent Analysis)

L.G. Pikulik and M.A. Solomakho (effect of temperature on electronic spectra of complex molecules in solutions), G.M. Kislyak (phosphorescence of certain solvents), B.I. Stepanov et al. (theory of secondary absorption and luminescence, comparison of classical and quantum mechanical treatments of interaction of light with matter and calculation of band profiles of complex molecules), M.A. Yel'yashevich (interaction of electronic and vibrational motion in complex molecules), S.I. Kubarev (general quantum-mechanical theory of spectra of complex molecules), K.K. Rebane, A.A. Rentel' and O.I. Sil'd (probabilities of electron-vibrational transitions of an oscillator; V.M. Agranovich, B.S. Neporent et al. took part in discussion of this paper), M.A. Alentsev (absorption and luminescence spectra of erythrosine), D.S. Shigorin et al., Yu.V. Naboykin, B.A. Zadoroshnyy and L.A. Ogurtsova (spectroscopic studies of hydrogen bonds), L.D. Derkacheva (effect of concentration of hydrogen ions on fluorescence of naphthalene derivatives), Ye.A. Boshevol'nov, V.V. Zelinskiy et al. (de-activation of

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excited states of complex organic molecules), T.M. Bember and A.S. Cherkasov (effect of fluorescence quenching on quantum yields of photochemical reactions of some anthracene derivatives), V.S. Adamov and L.T. Kantarizhyan (kinetics of monomolecular luminescence processes), Ye.V. Anufriyeva and A.D. Zaytseva (phosphorescence of polymers during vitrification), T.N. Godnev, R.V. Yefremova, N.P. Ivanov and L.A. Kravtsov (spectroscopic studies of chlorophyll), A.A. Krasnovskiy and S.S. Litvin (luminescence of leaves and model systems). Some papers discussed luminescence of uranyl compounds. Papers read at four sessions of the second section dealt with quantitative and qualitative determination of the amounts of certain elements and organic compounds in mixtures of various kinds; development of new methods and apparatus for analytic purposes, application of luminescent analysis in biology, medicine, technology and agriculture. Proceedings of the second section of the Conference will be published by the Academy of Sciences, Byelorussian SSR.

Card 6/6

BAKHSHIYEV, N.G.

Effect of universal intermolecular interactions on the position of the electron spectra of molecules in two-component solutions. Part 1: Theory (liquid solutions). Opt. i spektr. 10 no.6:717-726 Je '61. (MIRA 14:8)
(Molecular dynamics) (Solution (Chemistry))

BAKHSHIYEV, N.G.

STRUCTURE AND PHYSICAL PROPERTIES OF MATTER IN A LIQUID STATE
reports read at the 4th Conference convened in KIYEV from 1 to 5 June 1959, published by the publishein House of KIYEV University, KIYEV, USSR, 1962

BAKHSHIYEV, N.G.

Universal molecular interactions and their effect on the position of electronic spectra of molecules in two-component solutions. Part 3. Derivatives of naphthalene, stilbene, diphenyl, aniline, fluorene, and pyridine (liquid solutions). Opt. i spektr. 7 no.4:473-478 Ap '62. (MIRA 15:5)
(Molecular spectra) (Organic compounds)

BAKHSHIYEV, N.G.

S/185/62/007/007/006/010
1048/1248

AUTHOR: Bakhshiev, N.G.

TITLE: Universal effect of the internal field and the position of the electron spectra of molecules in solution

PERIODICAL: Ukrains'kyy fizychnyy zhurnal, v.7, no.7, 1962, 748-750

TEXT: A simple theory is formulated for the universal effect of the internal field of a solution on the position of the electron spectra of the solute molecules. The following simple equations are derived on the basis of the Onsager model of the molecule - medium system:

$$(1)\quad W = -\mu F \cos\chi,$$

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Universal effect of the...

where W is the average energy of interaction between a charge-free molecule of the solute and the adjacent solvent molecules, μ is the dipole moment of the molecule, F is the field;

$$(2)\ \Delta W_{st} = -\int_{\mu_g}^{\mu_e} F_{st} d\mu,$$

where ΔW_{st} is the stabilization energy difference between the basic and excited electron levels, and F_{st} is the static field associated with the polarization of the medium by the inherent and induced dipole moments of the solute molecules; μ_g' and μ_e' are the dipole moments of the solute molecule in the basic and excited electronic states;

$$(5)\ \Delta\nu = C_1\left(\frac{\varepsilon-1}{\varepsilon+2} - \frac{n^2-1}{n^2+2}\right)\left(\frac{2n^2+1}{n^2+2}\right) + C_2\left(\frac{n^2-1}{n^2+2}\right)\left(\frac{2n^2+1}{n^2+2}\right) + C_3\frac{n^2-1}{n^2+2}$$

where $\Delta\nu$ is the shift of the spectrum, $C_{1,2,3}$ are constants whose

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values depend on the properties of the solute molecule, ε is the static dielectric constant and n the refraction index of the medium. The validity of equation (5) was proven by comparison with a large amount of experimental data.

ASSOCIATION: Gosudarstvennyy opticheskiy institut (The State Optical Institute, Leningrad)

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BAKHSHIYEV, N.G.

Spectroscopic method for determining the dipole moments of polyatomic molecules in the ground and excited states. Ukr. fiz. zhur. 7 no.8:920-923 S '62. (MIRA 16:1)

1. Gosudarstvennyy opticheskiy institut, Leningrad.
(Dipole moments) (Molecules) (Spectrum analysis)

BAKHSHIYEV, N.G.

Universal molecular interactions and their effect on the position of the electronic spectra of molecules in two-component solutions. Part 2: Phthalimide derivatives (liquid solutions). Opt. i spektr. 12 no.3:350-358 Mr '62. (MIRA 15:3)
(Molecular spectra) (Phthalimides)

S/051/62/012/005/003/021
E032/E514

AUTHOR: Bakhshiyev, N.G.

TITLE: Universal intermolecular interactions and their effect on the position of electronic spectra of molecules in two-component solutions.
IV. Solvent dependence of the Stokes shift in the luminescence spectrum (liquid solution)

PERIODICAL: Optika i spektroskopiya, v.12, no.5, 1962, 557-564

TEXT: It was shown in the previous paper (Opt.i spektr.,10, 717, 1961) that a number of very important factors were not taken into account in the theoretical study of the effect of the solvent on the spectra. The theory reported in the latter paper is now used to derive a new expression for the Stokes shift $\Delta\nu_e^a - \Delta\nu_e^f$, where $\Delta\nu_e^a$ is the frequency shift of electron transitions in absorption spectra of solutions and $\Delta\nu_e^f$ is the corresponding shift in luminescence spectra. The new expression takes into account the effect of universal intermolecular interactions (UII) on the spectra. The new formula reads

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$$\Delta\nu^{a-f}_{sol.} = \Delta\nu^{a-f}_{vapour} + \Delta c^{a-f}\varphi(\varepsilon, n_D) = \text{const} +$$

$$+ \Delta c^{a-f} \frac{(2n_D^2 + 1)^2}{(n_D^2 + 2)^2}\left(\frac{\varepsilon-1}{\varepsilon+2} - \frac{n_D^2 - 1}{n_D^2 + 2}\right) \qquad (6)$$

where

$$\Delta c^{a-f} = c_1^a - c_1^f = \frac{2}{hcr^3}(\mu_g^2 + \mu_e^2 - 2\mu_g\mu_e\cos\alpha). \qquad (7)$$

In the above expressions μ_g and μ_e are the dipole moments of the molecule under investigation and of the solvent, ε is the dielectric constant and n_D is the refractive index of the solvent, c_1^a and c_1^f are certain parameters defined in the above paper, α is the angle between the dipole moments μ_g and μ_e and r is the radius of the Onsager density. This formula is compared with experimental results for a large group